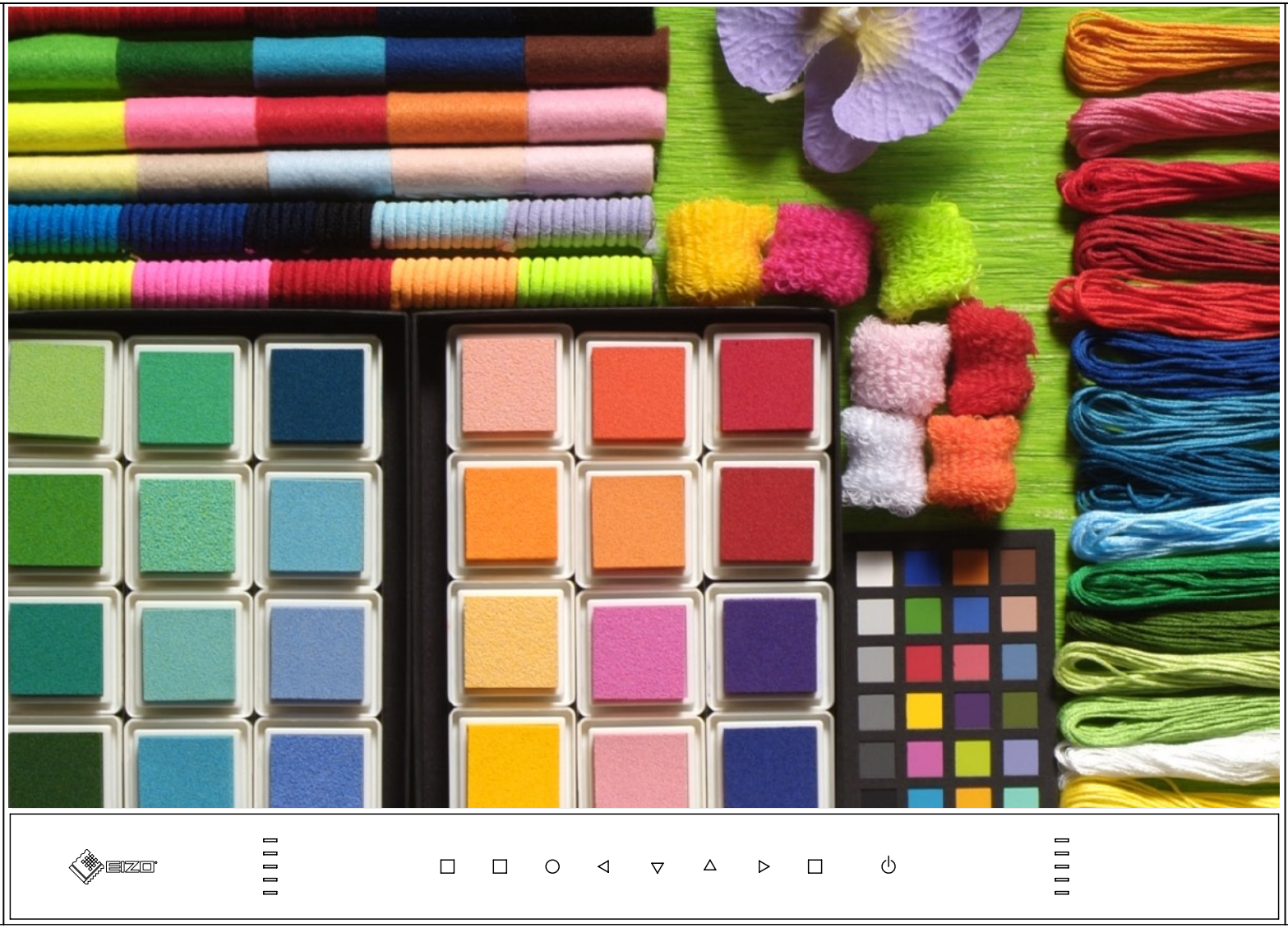
ColorEdge® CG221

Color as it's meant to be

Cyan
Magenta
Yellow
Black
R G B
5 25 50 75 95100 5 25 50 75 95100 5 25 50 75 95100 5 25 50 75 95100
M+Y Y+G G+M

See all the colors of life

With the ColorEdge CG221, EIZO is once again taking the performance of LCD monitors to new levels. Not only does it reproduce the Adobe RGB color space for stunningly rich and natural hues, but it also addresses color and brightness uniformity issues common to LCD monitors. Outfitted with EIZO's latest circuitry, the ColorEdge CG221 comes with a digital uniformity function that ensures color and brightness are virtually the same anywhere on the screen. From delicate cyans to deepest greens, as well as rich emeralds, yellows and magentas, every color looks just as it should whether its displayed in the center of the screen or in the perimeters.



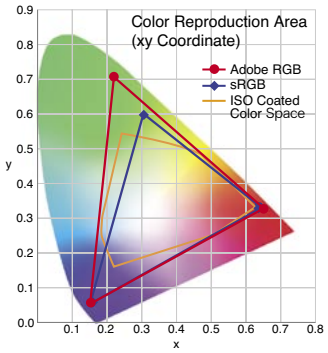
sRGB Monitor

ON

This photo is for illustrative purposes only. Actual display of color may vary depending on the monitor.

Adobe RGB Coverage

Expanded Color Space Meets Professional Needs

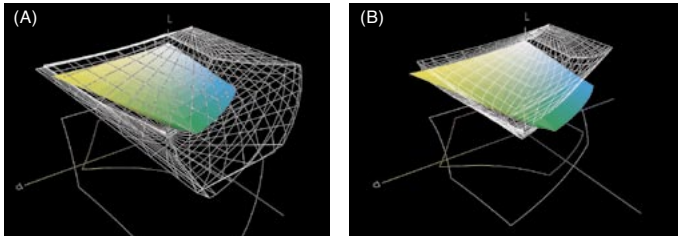


Graphics professionals are well aware that a totally digital workflow and the ability to do soft proofing results in higher efficiency and lower costs. Many also want to switch to space-saving LCD monitors, but are hesitant to do so because of concerns regarding the color accuracy required for professional color work. EIZO's solution is the ColorEdge CG221: an LCD monitor that covers the Adobe RGB color space. It thus encompasses not only the sRGB color space, widely supported by many computer monitors, operating systems and digital cameras, but also the ISO-coated and US web-coated CMYK color spaces used in printing. This ultra-high-performance monitor finally provides all the color reproduction capabilities graphics professionals have been seeking, in the compact LCD format.

Advantages Of Adobe RGB

In order to realize the advantages of soft proofing, a color management system for sharing accurate colors among photographers, graphic artists and printers is a necessity. The most efficient way to achieve this is for all parties to use a standardized color space with a wide range of colors. The ColorEdge CG221 now makes it possible to adopt the Adobe RGB extended color space, which has become the de facto standard for professional color processing. It ensures guaranteed color reproduction across all digital platforms, providing a color management environment that fully supports soft proofing, from the photography stage to final CMYK printing.

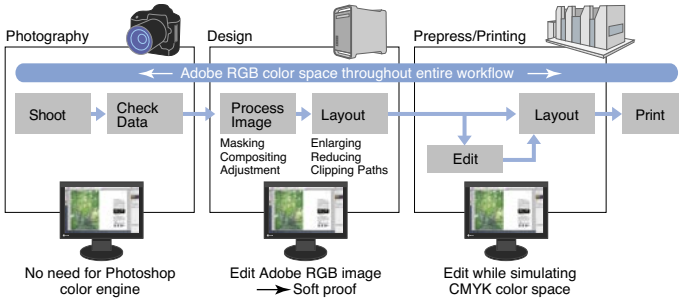
3D representation in CIE Lab of comparisons between ISO Coated and sRGB/Adobe RGB Color Spaces



(A) Adobe RGB (white wire frame) encompasses the ISO coated color space (multicolor solid).

(B) sRGB (white wire frame) does not cover many of the green, cyan, and yellow areas of the ISO coated color space (multicolor solid).

Color Management



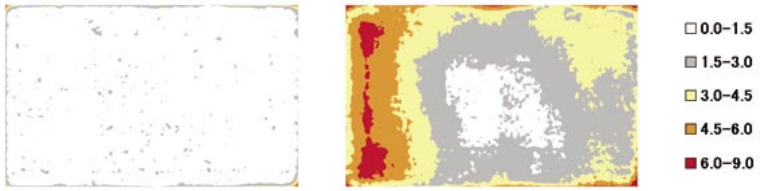
A common color space throughout the workflow lets you switch from hardcopy proofing to soft proofing.

By covering the Adobe RGB color space, the ColorEdge CG221 is not subject to influence from the OS color engine or software, and allows final color checks in Adobe RGB. This offers a great advantage over sRGB monitors, whose smaller palette is not capable of accurately reproducing colors in certain areas of the spectrum, notably emerald greens and cyans. Retouching images with these monitors requires numerous printouts to achieve accurate color matching. By enabling on-screen retouching and color confirmation, the ColorEdge CG221 makes your work faster, easier and more accurate.

Precision Color Reproduction

Brightness and Color Uniformity with 12-Bit LUT

Achieving uniform levels of brightness and color across the screen has been all but impossible with LCD monitors. To correct this problem, EIZO has developed an ASIC (Application Specific Integrated Circuit) and incorporated it into the ColorEdge CG221. This ASIC has a 12-bit look-up table (LUT) with an extensive palette of 4,081 grayscale tones for each R, G, and B, and internal calculation accuracy of 16-bits (64 times more accurate than 10-bit internal calculation).

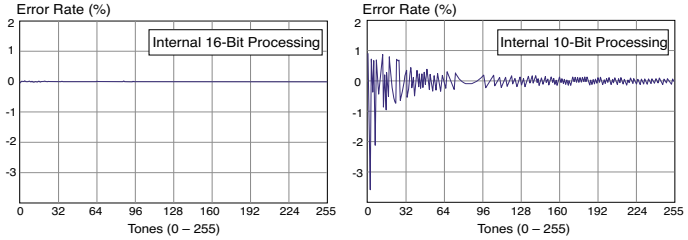


*Color-separated image with Delta-E*ab distribution across the screen (gray level 128 measured)*

16-bit Processing

The 16-bit internal calculation produces grayscale rendering that is on a par with high-end CRT monitors. The result is not only a much greater degree of detail in dark areas, but overall uniformity of brightness and color throughout the entire screen.

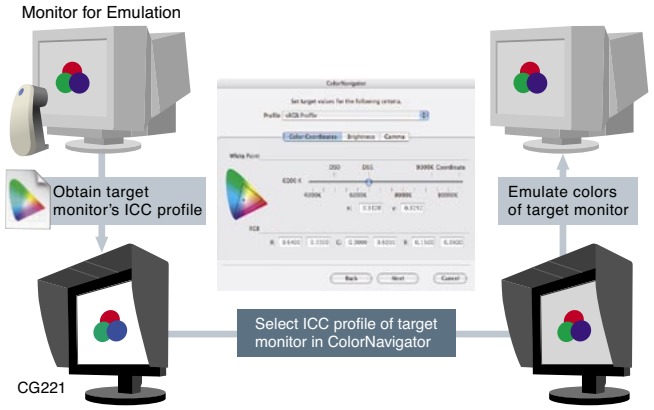
16-bit v. 10-bit processing



With 10-bit processing, the error rate is high in low tonal areas during calculation. With 16-bit processing, accuracy is significantly improved resulting in fewer conversion errors.

Emulation Function

To take full advantage of the 12-bit LUT and 16-bit internal processing capabilities, EIZO has equipped the ColorEdge CG221 with an emulation function. Simply by obtaining the ICC profile of another monitor and using EIZO's ColorNavigator software, the ColorEdge CG221 can emulate its color characteristics. This is useful when another monitor is the standard monitor in a workflow, when different models are used in a multi-monitor setup, or for a remote proofing environment where the client, designer and printer want to be sure that their various monitors are displaying color the same way.



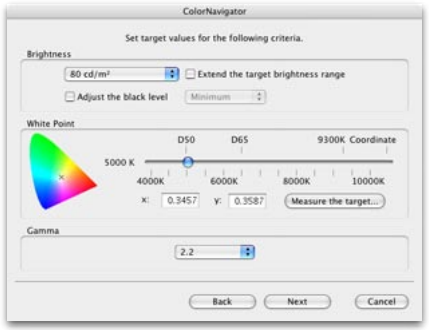
Factory Adjustment Of Gamma

Each ColorEdge CG221 monitor is adjusted at the factory to a gamma level of 1.8. This is accomplished by measuring the R, G and B gamma values from 0 to 255, then using the monitor's LUT with its 4,081-tone palette to select the 256 most appropriate tones to achieve the 1.8 value.

The benefit of factory adjustment is that precise, non-fluctuating gamma values are necessary for the accurate display of colors. If colors are not based on specific values and cannot be adjusted, images will be displayed differently by different monitors. The ColorEdge CG221 provides both precision and consistency, so you can be sure that the final product will look exactly the way you want it to.

ColorNavigator Software

Simple and Precise Calibration



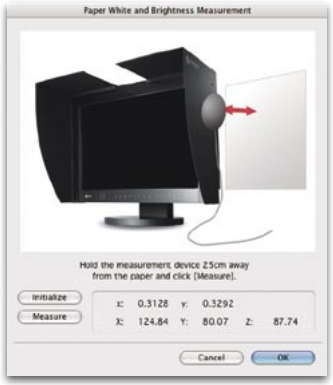
The EIZO-developed ColorNavigator software makes calibration both simple and accurate. Instead of having to judge colors and do time-consuming inputting, or having a specialist do it for you, all you need to do is input target values for brightness, white point and gamma. ColorNavigator directly utilizes the 12-bit LUT for accurate and reliable calibration in minutes.

Calibration Parameters

Brightness		30 cd/m² – 200 cd/m²† in 5 cd/m² increments Possible to set to the monitor's maximum and minimum values.
	Black Level	0.2 cd/m² – 3.5 cd/m² in 0.1 cd/m² increments Possible to set to the monitor's minimum value.
White Point	**Color Temperature**	4,000 K – 10,000 K in 100 K increments
	Color Coordinates	X Value, Y Value
Gamma		1.0 – 2.6 in 0.1 increments and L*

† *It may not be possible to set the brightness to the maximum value (200 cd/m²) depending on LCD panel performance.*

Paper White Measurement

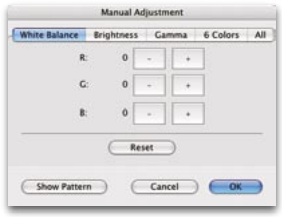


ColorNavigator offers a paper white measurement function for color matching between the image on the monitor and the im-age on the printouts. By measuring the white of the paper to be used for printing, ColorNavigator will automatically set the target values for brightness and white point accordingly.

This function is compatible with the X-Rite DTP94, DTP94B, Eye-One Display 2, and Eye-One Pro only.

Post-Calibration Color Adjustment

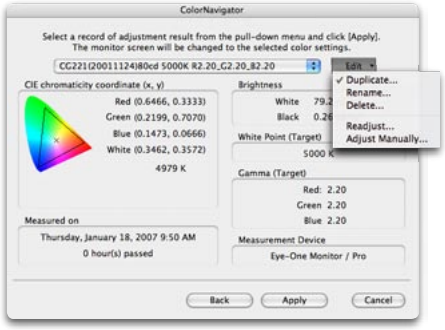
Sometimes due to variations in output from different printers or the special requirements of a project, it is necessary to fine-tune an otherwise perfectly calibrated monitor to match target colors. ColorNavigator lets you easily adjust hue and saturation for all six colors (red, green, blue, cyan, magenta and yellow), as well as white balance, brightness, black level and gamma, to achieve the closest possible visual match. For confirmation of calibration results or to achieve more accurate manual adjustments, a test pattern screen can now be displayed. The test pattern screen shows a full grayscale ramp as well as just the low tones (blacks), high tones (whites), and gamma values. The results of all manual adjustments are immediately reflected on the test pattern screen.



Post-Calibration Manual Adjustment Screen

Test Pattern Screen

Convenient Calibration Profile Management



ColorNavigator also makes it easy to keep track of calibration profiles. When you want to adjust a profile in order to match your monitor to other equipment such as printers or light boxes, you can use the Duplicate function to make a copy of it, then adjust the duplicate profile and give it a new name. Naturally, you can make as many duplicates, and thus adjusted profiles, as desired.

Recalibration Reminder

After initial calibration, a monitor needs to be recalibrated at regular intervals to maintain color accuracy. ColorNavigator includes a recalibration reminder that will appear after a certain number of user-determined hours. When the monitor is first calibrated, the date and time are saved. After the time you set has elapsed, an LED on the front panel lights up, and a reminder message appears the next time ColorNavigator starts up. If you prefer to calibrate according to the amount of change that has occurred, you can measure the color difference (Delta-E) between the original target points and the actual current points at any time.

Additional Features

Ergonomic Design

The monitor swivels smoothly through 70°, tilts 33° and moves up and down over a 100 mm range. The panel can be removed for mounting.

Touch Sensitive Switches

The front panel features highly sensitive electrostatic “touch” switches. Ports and modes are listed on the panel and LEDs indicate which port and mode is in use. The LEDs can be set to low, middle or high luminance, or can be turned off entirely.

Monitor Hood Supplied

The ColorEdge CG221 comes supplied with a monitor hood for glare reduction. The inside of the hood is coated with an anti-reflective material. A panel on the top cover slides open so the hood does not need to be removed in order to use a calibration device.

Screen Cleaner Kit

Keep your screen free from dust and fingerprints with this screen cleaner kit. Includes pump spray and cloth.

Five-Year Warranty

EIZO and its authorized distributors offer a five-year limited warranty for the ColorEdge CG221.

Accessories

Compatible Measurement Devices

X-Rite

MonacoOPTIX^{XR}/MonacoOPTIX PRO^{XR} †

DTP94/DTP94B †

Eye-One Series ‡

ColorVision

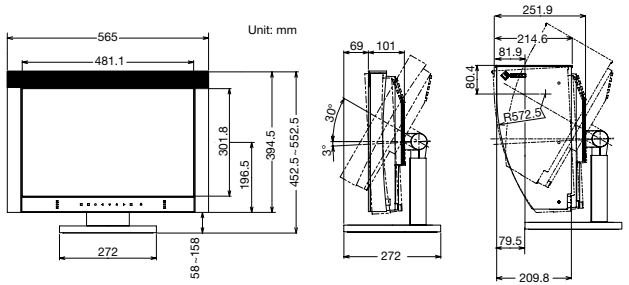
Spyder 2 Series †

For optimum calibration results, an X-Rite Eye-One spectrophotometer is recommended.

† These measurement devices are not compatible with Macintosh OS 9.2.2.

‡ Eye One Display LT is compatible with Macintosh OS 10.3.9 or later only.

Dimensions



Specifications

ColorEdge® CG221

Panel	**Panel Size and Type**		56.4 cm (22.2") TFT color LCD panel
	Viewing Angles (H, V)		170°, 170° (at contrast ratio of 10:1)
	Brightness / Contrast		200 cd/m² / 400:1
	Response Time		30 ms (typical)
	Native Resolution		1920 × 1200
	Active Display Size (H × V)		478 × 299 mm
	Viewable Image Size		Diagonal: 563 mm
	Pixel Pitch		0.249 × 0.249 mm
	Display Colors		16.77 million from a palette of 68 billion
Cabinet Color			Black
Dot Clock			Analog: 202.5 MHz, Digital: 162 MHz
Scanning Frequency (H, V)		**Analog**	31 – 94 kHz, 49 – 86 Hz
		Digital	31 – 76 kHz, 59 – 61 Hz (VGA Text: 69 – 71 Hz)
Input Signals			Analog: RGB Analog, Digital: DVI Standard 1.0
Input Terminals			DVI-I 29 pin × 2 (switchable)
USB Port / Standard			1 upstream, 2 downstream / USB Standard Rev. 2.0
Plug & Play			VESA DDC 2B
Power	**Power Requirements**		AC 100 – 120 V, 200 – 240 V: 50 / 60 Hz
	Power Consumption		100 W (typical)
	Power Save Mode		Less than 2 W
Physical Specifications	**Height Adjustment Range**		100 mm
	Tilt / Swivel / Pivot		30° Up, 3° Down / 35° Right, 35° Left / –
	Dimensions (W × H × D)		With Stand: 565 × 452.5 – 552.5 × 272 mm
			Without Stand: 565 × 394.5 × 101 mm
	Net Weight		With Stand: 14.5 kg, Without Stand: 10.4 kg
Auto Brightness Functions			Auto Brightness Stabilization
Auto Adjustment Functions			Auto Adjustment, Range Adjustment
Display Mode Options			Fine Contrast (sRGB, Custom, Calibration, Emulation)

ScreenManager OSD Adjustment Functions	**Screen Adjustment**		Clock, Phase, Position, Resolution, Signal Filter, Screen Size (full screen, enlarge, normal), Smoothing (5 stages), Border Intensity
	Color Adjustment		Brightness, Range Adjustment (Auto), Independent 6-Color Control, Gamma, Temperature (500 K increments from 4,000 K – 10,000 K), Saturation, Hue, Gain, Reset
	Power Save Settings	**Analog**	PowerManager (VESA DPMS)
		Digital	PowerManager (DVI DMPM)
	Other Settings		Signal Settings, Input Priority, Product Information (product name, serial number, resolution, operating time), OSD Menu Settings, Adjustment Lock, Languages (English, French, German, Italian, Japanese, Spanish, Swedish), Off Timer, Reset
Certifications and Standards			c-Tick, CE, CB, UL (cTÜVus), CSA (cTÜVus), FCC-B, Canadian ICES-003-B, TÜV/S, VCCI-B, RoHS, WEEE, EIZO Eco Products 2004
Supplied Accessories			AC power cord, signal cables (DVI-D – DVI-D, DVI-I – D-Sub mini 15 pin), USB cable, setup guide, EIZO LCD Utility Disk (ColorNavigator software, HTML user's manual, ICC Profile), adjustment certificate, screen cleaner kit, monitor hood, quick reference, warranty registration card
Warranty			Five Years*

** The usage time is limited to 30,000 hours and the warranty period is limited to three years for the LCD panel from the date of purchase. The warranty period of the backlight is warranted only if the monitor is used within the recommended brightness of up to and including 100 cd/m² with a color temperature between 5,000 K – 6,500 K and limited to three years from the date of purchase subject to the usage time being less than or equal to 10,000 hours.*
With current LCD technology, a panel may contain a limited number of missing or flickering pixels.

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